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THE DESCRIPTION OF THE Double Reflecting Microſcope;

BRITISH MUSEUM

As Made and Sold by

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LEADENHALL-STREET.

A. Repreſents the Body of the Microſcope, into which a leſſer Tube B ſlides, with a Male Screw at the Bottom, whereon to faſten the Magnifiers.

f. A flat horizontal Plate, with a circular Hole 4 in the Center thereof, over which the Body of the Microſcope is ſuſpended in a perpendicular Line.

This is the Stage whereon to lay all Sorts of Objects for Examination.

G. Is a concave Looking-Glaſs, ſet in a Box of Braſs, and turning in an Arch *d*, upon two ſmall Screws. From the Bottom of the Arch comes a Pin, which by letting down into the Hole *e*, in the Center of the Pedeſtal, enables it to turn vertically

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tically, or horizontally, and reflect the Light, either of a Candle or the Sky, directly upwards on the Object to be examined.

H. A double convex Lens, which, turning on two Screws, tranſmits Light to aſſiſt in illuminating opake Objects, when the long cylindrical Part *f* is placed in the Hole *f*.

I. Is a tubular hollow Cylinder with its Sides opened, to the End whereof is ſcrewed a concave Silver Speculum *h*, having a round Hole in the Middle of it. This Cylinder ſliding over the Snout of the Microſcope *i*, and ſet properly to the Magnifier made uſe of, a direct Light becomes reflected from the *Silver Speculum* on any opake Object under Examination.

K. A flat Piece of Ivory, called a Slider, with four round Hole filled with Objects confined between Talcs or Iſinglaſs by Braſs Rings of Wire: The Curious may have what Number they pleaſe to make Collections.

L. A Contrivance to place the Sliders in, and keep them ſteady for Obſervation, which may be called a *Slider Holder*. It conſiſts of a ſpiral Steel Wire confined between three flat Circles, one whereof is moveable for the Admiſſion of the Sliders. The Shank underneath fits the round Hole 4, in the Center of the Stage *f*, where it muſt be put, when uſed.

M. A Braſs Fiſh-pan, whereby to faſten a Smelt, Gudgeon, or other ſmall Fiſh, in order to ſee the Blood circulate in its Tail. For this Purpoſe the Tail of the Fiſh muſt be ſpread acroſs the oblong Hole *k*, at the ſmaller End of the Pan; then by ſlipping the Bottom *l* into the ſlit *m* through one Corner of the Stage F, the Spring at the Bottom of the Stage will make it ſteady, and preſent it well to View. If the Fiſh is unquiet, the Four little Holes at the End are intended for Threads, or little Pegs of Wood, to aſſiſt the Ribband at the Side in bracing it down tight, and prevent its being able to ſtruggle.

N. A Glaſs Tube, which is more convenient than the Fiſh-pan, for viewing the Circulation in a Frog, Newt or Eel. The Tail of a Newt or Eel, or, in a Frog, the Web between the Toes of the hind Feet, are the Parts where it may be ſeen beſt, as being the moſt tranſparent. When the Object is well expanded on the Inſide of the Tube, ſlide the Tube along under the Hole 4, in the Center of the Stage F (where there are two Springs and a Cavity made in the Shank to hold it) and bring your Object directly under the Magnifier. A Frog is repreſented in the Glaſs Tube before us, to ſhew the Poſture it ſhould lie in.

There are Three of theſe Glaſs Tubes ſmaller one than another; and the Size of the Object muſt direct People which to uſe: But, in general, the leſs Room the Creature has to move about in, the eaſier it may be managed, and the quieter it will lie to be examined.

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N. A long Wire with a Worm at one End, to pull out the Cotton kept in the Tubes, and prevent their breaking one another; and likewiſe to clean the Tubes when foul, by winding ſome Cotton round the Worm, and rubbing it about within them.

O. A long ſtraight Wire, with a Pair of Spring Tongs at one End, and at the other a ſharp Point, to hold faſt or ſtick Objects on. This Wire ſlips backwards or forwards in a Spring Tube *o*, faſtened to a Joint with a ſhort ſhank *p*, that fits into a round Hole of the Slit *m*, upon the Stage F.

P. A little Block of Ivory, white at one End, and black at the other, for Objects to be placed on, according to their Colour; with a Hole through which to ſtick it on the Point of the Steel Wire O. On this Block, Sands, Salts, or other little Bodies are to be laid, in order to be viewed by the reflected Light of the Silver Speculum *b*; and it is made thus ſmall, that it may obſtruct as little as poſſible the Rays thrown up from the Looking-Glaſs G. By this Contrivance, opake Objects are ſeen to great Advantage.

Q. Small Cells, wherein the Magnifying-Glaſſes are ſet, and therefore uſually called *Magnifiers*. of theſe, with Glaſſes of as many different Powers, in the moſt convenient Gradation, belong to this Microſcope; and ſcrew on, when made uſe of, to the Bottom of the Snout at *q*.

R. A Braſs Cone to faſten on the Shank underneath the middle of the Stage F, principally when the firſt, ſecond, or third Magnifiers are employed,

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to look at Objects that are very tranſparent; for Experience teaches that ſuch Objects are rendered much more diſtinctly viſible, by intercepting ſome Part of the oblique Rays reflected from the Concave Looking Glaſs.

A little Experience will ſhew the Neceſſity of ſuiting our Light to the Object, and the Glaſs we uſe to view it. In ſome Caſes 'tis impoſſible to have too much; at other Times, when the Object has little or no Colour, a few Rays are ſufficient, and the Out-lines can ſcarce be ſeen, unleſs the Light comes from a Point only.

A due Attention to this will always obtain a ſatisfactory View of all Kinds of Objects; whereas, without it, the beſt Glaſſes in the World may be imagined to be but very indifferent.

S. A round Cell or Box, to confine Fleas, Mites, Lice, or any other living Object, between its Top and bottom; one of which is a Concave, and the other a plain Glaſs.

At the Time of Examination this Cell is to be placed over the Hole 4, in the Middle of the Stage F. Then being moved about, the Object will ſoon be found.

T. A Concave Glaſs, wherein to place a Drop of any Liquid, or other Object, occaſionally to be examined

V. A Watch-Glaſs, for holding a Tea-ſpoonful of Water, to view the larger Kinds of Animalculas ſwimming backwards and forwards therein.

W. An Ivory double Box, with Covers ſcrewing on at each End, deſigned to contain a Number of Talcs, and Rings of Wire, to faſten them in the Sliders.

X. A Pair of Forceps or Nippers, for taking up and adjuſting an Object to be examined.

Y. A Hand Magnifying Glaſs, extremely uſeful in preparing Objects for the Microſcope, and on many other neceſſary Occaſions.

Z. A ſoft Hair Bruſh to clean the Glaſſes, or take up a Drop of any Fluid for Examination. The Quill End ſerves to remove any dry Dirt adhering to them.

If your Intention is to examine any Thing in a Slider, thruſt your Slider between the flat Braſs Plates in the *Slider-Holder* L; which place in the round Hole 4, in the Middle of the Stage F; then ſcrew on whatever Magnifier you chooſe to employ, to the Snout of the Microſcope, and bring the Figure that is on the Tube B, correſpondent to the Number of the Magnifier you uſe, to the upper Part of the Tube A.

But if the Object you examine is applied on either End of the Steel Wire O, or in the Glaſs Tube N (as the Tube is faſtened underneath the Stage, and the Steel Wire ſtands not at the ſame Place as the Sliders do) the Figures on the Tube B are not to be regarded; but the Body of the Microſcope muſt be moved up or down, till you come to the Focus.

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If an opake Object is to be viewed, fit the little Ivory Block P on the End of the Steel Wire O, and if the Object be white, place it on the black; if black, on the white Side: Then put the hollow Cylinder I, with the Silver Speculum *b*, over the Snout of the Microſcope; bring the Top of the Cylinder to the Figure marked on the ſaid Snout, which anſwers to the Number of the Magnifier you uſe, moving your Microſcope up or down, till you ſee the Object diſtinct.——The Object will be ſhewn by this Contrivance in a delightful Manner; for the Rays of Light thrown upwards from the Looking-Glaſs, will paſs by the Sides of the Object, become reflected back upon it by the *Silver Speculum*, and ſo enlighten it, that its Colours, as well as Shape, are beatifully exhibited. When an Object is too large for this Speculum, the convex Glaſs H muſt be made uſe of, to direct a Light upon it from a Candle or the Sun.

The two Glaſſes within the Body of the Microſcope ſhould be taken out ſometimes (by unſcrewing the Parts they lie in) and cleaned with due Care, breathing on them, and wiping them with Soft Waſh-Leather or Linen-Cloth. Dry them well before they are replaced, and be very cautious not to ſoil them with the Moiſture of your Fingers. If any dry Dirt ſticks on them, waſh it off with Spirits of Wine.

The Magnifying Glaſſes in the little Cells muſt likewiſe be made clean frequently with the Hair Bruſh; and if that is not ſufficient, take them out, breath on them and wipe them; for if any Powder, Duſt, or Soil, adheres to the Glaſſes, no Objects can be ſeen well.